PHYS 684.1
November 19, 2003

# Homework #7

Due: November the $26^{th}$.

1. Read chapter 8 of Edwards and Syphers on synchrotron radiation.
2. Read the Superconducting Super Collider note SSC-175 distributed in class on Hamiltonian theory.
3. Let the projection map P be defined as linear motion R from the reference point to a given location,

$$R = \begin{pmatrix} c_x & s_x \\ -s_x & c_x \end{pmatrix} , \tag{1}$$

with $c_x = \cos\phi$, $s_x = \sin\phi$, followed by the nonlinear kick $\Delta x' = gx^n$, finally followed by inverse linear motion $R^{-1}$ back to the reference point. Demonstrate that the discrete projection Hamiltonian of P is given by

$$H_p = -\frac{g}{n+1}(c_x x + s_x x')^{n+1} \tag{2}$$